040 External RF Power Control for 2m/70cm Handhelds

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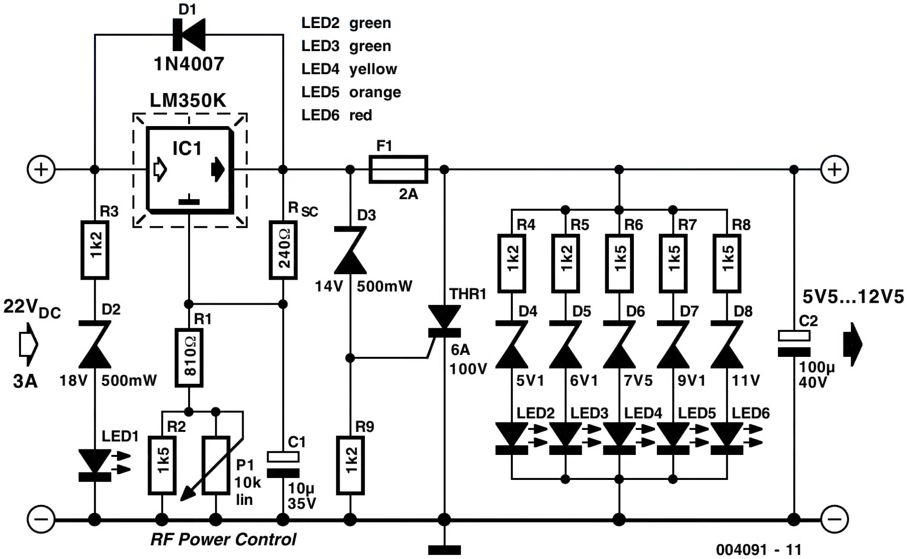
Most modern handheld transceivers for 2 m and 70 cms ham radio incorporate MOSFET RF power modules and are capable of operating at supply voltages between 4.5 V and 13.8 V. When using four NiCd batteries (4.8 V), RF power on high power mode (H) is typically 1.8 watts. When using a 9.6 V battery pack, the H power level is typically 5 watts, while 500 mW or 50 mW is produced in L (low power) and EL (economical low) mode, respectively.

Sometimes low RF power is not sufficient, while high power seems wasteful. The circuit shown here enables transceivers like the Yaesu F11/41R, Kenwood TH22AT, Icom ICT22A and others to supply any RF power level between 2 and 5 watts while also providing a low power mode.

The LM350K voltage regulator used in this circuit is capable of supplying 1.25 V to 33 V at up to 3 A. The output voltage is defined by R_{SC}, R1, R2 and P1. The latter acts as the RF power control.

A 'crowbar' thyristor is used on the supply output line to protect the expensive radio from possibly disastrous supply voltage levels. In the unlikely case of the output voltage rising above 14 V (as defined by zener diode D3), the thyristor (a 6A/100V type) is triggered and it will faithfully destroy fuse F1. The action is similar to throwing a crowbar across the output terminals!

Each of the LEDs at the output will light when the output



voltage exceeds the threshold set up by the associated zener diode. In this way you get a visible and colourful RF power indicator. The actual span of the output voltage will be 5.5 to 12.5 V. The voltage regulator should be fitted with a suitably sized heatsink.

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